CLAIMS

1. Peptide or peptide derivative comprising:

   (a) the amino acid sequence (I)
   G-M-A-A-L-P-R-L-I-A-F-T-S-E-H-S-H-F-S-L-K-K-G-A-A

   (b) the amino acid sequence (II)
   E-R-G-K-M-I-P-S-D-L-E-R-R-I-L-E-A-K-Q-K

   (c) one of the amino acid sequences shown in Fig. 1 or 2

   (d) partial regions of the amino acid sequences shown in (a), (b) or/and (c) having a length of at least 6 amino acids or/and

   (e) amino acid sequences which exhibit a specificity or/and affinity of binding to MHC molecules which is essentially equivalent to that of the amino acid sequences shown in (a), (b), (c) or/and (d).

2. Peptide or peptide derivative as claimed in claim 1 comprising:

   (a) the amino acid sequence (I),
   (b) the amino acid sequence (II),
   (c) partial regions of the amino acid sequences (I) or/and (II) or/and

(d) amino acid sequences with a specificity or/and affinity of binding to MHC molecules which is essentially equivalent to that of the amino acid sequences from (a), (b) or/and (c).

3. Peptide or peptide derivative as claimed in claim 1 or 2,
wherein
it has a length of at least 8 amino acids.

4. Peptide or peptide derivative as claimed in one of the claims 1 to 3,
wherein
it has a length of at least 10 amino acids.

5. Peptide or peptide derivative as claimed in one of the claims 1 to 3,
wherein
it has a length of up to 25 amino acids.

6. Peptide or peptide derivative as claimed in one of the claims 1 to 5,
wherein
it carries a marker group.

7. Peptide-mimetic,
wherein
it has a specificity or/and affinity of binding to MHC molecules which is essentially equivalent to that of a peptide or peptide derivative as claimed in one of the claims 1 to 6.

8. Complex which comprises at least one peptide or peptide derivative as claimed in one of the claims 1 to 6 or a peptide-mimetic as claimed in claim 7 which is bound to a MHC molecule or to a peptide-binding derivative of a MHC molecule.

9. Complex as claimed in claim 8,
wherein
it comprises a MHC class II molecule or a peptide-binding derivative thereof.

10. Complex as claimed in claim 9,
wherein
the MHC class II molecule is of the type DR1, DR2, DR3 or DR4.

11. Complex as claimed in claim 10,
wherein
the MHC class II molecule has the subtype DR B1 0101, DR B1 0301, DR B1 0401, DR B1 0402, DR B1 0404 or DR B1 1601.

12. Complex as claimed in claim 11,
wherein
the MHC class II molecule has the subtype DR B1 0101 or DR B1 0401.

13. Complex as claimed in one of the claims 8 to 12,
wherein
it comprises a recombinant MHC molecule or a peptide-binding derivative thereof.

14. Complex as claimed in claim 13,
wherein
it comprises a soluble peptide-binding derivative of a MHC molecule.

15. Complex as claimed in one of the claims 8 to 14,
wherein
it carries a marker group.

16. Oligomerized peptide-MHC molecule complex containing at least 2 MHC molecules or MHC molecule derivatives which are associated by means of covalent or non-covalent interactions.

17. Oligomerized complex as claimed in claim 16,
wherein
it contains peptide-MHC molecule complexes cross-linked by chemical coupling reagents.

18. Oligomerized complex as claimed in claim 16,
wherein
it contains MHC molecules or MHC molecule derivatives cross-linked by an oligomerized peptide component with several MHC-binding regions.

19. Oligomerized complex as claimed in claim 16,
wherein
it contains peptide-MHC molecule complexes cross-linked by antibodies.

20. Oligomerized complex as claimed in one of the claims 16 to 19,
wherein
it contains MHC molecules as defined in one of the claims 9 to 14.

21. Oligomerized complex as claimed in one of the claims 16 to 20,
wherein
it contains at least one peptide or peptide derivative as claimed in one of the claims 1 to 6 or a peptide-mimetic as claimed in claim 7.

22. Pharmaceutical composition,
wherein
it contains a peptide or peptide derivative as claimed in one of the claims 1 to 6, a peptide-mimetic as claimed in claim 7 or/and a complex as claimed in one of the claims 8 to 21 as the active component, if desired in combination with common pharmaceutical additives.

23. Composition as claimed in claim 22,
wherein
it additionally includes an accessory stimulating component.

24. Composition as claimed in claim 23,
wherein
the accessory stimulating component is selected from cytokines or/and the surface antigen B7.

25. Use of a pharmaceutical composition as claimed in one of the claims 22 to 24 for the production of an agent for the diagnosis of diseases or of a predisposition to diseases which influence the immune system or of tumour diseases or of a predisposition to tumour diseases.

26. Use as claimed in claim 25 for the production of an agent for the diagnosis of autoimmune diseases or of a predisposition to autoimmune diseases.

27. Use as claimed in claim 25 or 26 for the production of an agent for the diagnosis of diabetes or of a predisposition to diabetes.

28. Method for the determination of a specific T cell subpopulation,
wherein
a sample containing T cells is brought into contact with a peptide or peptide derivative as claimed in one of the claims 1 to 6, a peptide-mimetic as claimed in claim 7 or/and a complex as claimed in one of the claims 8 to 21 and the reaction of T cells in the sample with the peptide or complex is determined.

29. Method as claimed in claim 28,
wherein
the reaction of the T cells is determined by FACS analysis using a fluorescent-labelled peptide or complex.

30. Method as claimed in claims 28 to 29,
wherein
before and/or after contact of the T cells with the peptide or the complex, a selection for pre-activated T cells is carried out.

31. Use of a pharmaceutical composition as claimed in one of the claims 22 to 24 for the production of an agent for the therapy or prevention of diseases which influence the immune system.

32. Use as claimed in claim 31 for the production of an agent for the therapy or prevention of autoimmune diseases.

33. Use as claimed in claim 31 or 32 for the production of an agent for the therapy or prevention of diabetes.

34. Use of a peptide or peptide derivative as claimed in one of the claims 1 to 6, a peptide-mimetic as claimed in claim 7 or a complex as claimed in one of the claims 8 to 21 for the production of an antigen, in particular of an immunogen or tolerogen.

35. Process for the isolation of a specific T cell subpopulation,
wherein
a sample containing T cells is brought into contact with a peptide or peptide derivative as claimed in one of the claims 1 to 6, with a peptide-mimetic as

claimed in claim 7 or with a complex as claimed in one of the claims 8 to 21, the T cells reacting with the peptide or complex are identified and if desired are separated from other T cells.

36. Process as claimed in claim 35,
wherein
before or/and after contact of the T cells with the peptide or the complex, a selection for pre-activated T cells is carried out.

37. Use of T cells isolated according to the process as claimed in claim 35 or partial structures thereof for the production of an antigen.

38. Use as claimed in claim 37,
wherein
the T cells or partial structures thereof are reinjected into the patients from which they were originally derived.

39. Use as claimed in claim 38,
wherein
inactivated T cells are reinjected.

40. Use as claimed in claim 39,
wherein
T cells capable of division are reinjected.

41. Antibody against a peptide or peptide derivative as claimed in one of the claims 1 to 6, a peptide-mimetic as claimed in claim 7 or a complex as claimed in one of the claims 8 to 21, obtainable by

immunization with the peptide, peptide derivative, peptide-mimetic or complex and isolation of an antibody produced by the immunization.

42. Anti-idiotypic antibody against an antibody as claimed in claim 41, obtainable by immunization with the antibody against the peptide, peptide derivative or peptide-mimetic or the complex and isolation of an anti-idiotypic antibody produced by the immunization.

43. T cell which reacts with a peptide or peptide derivative as claimed in one of the claims 1 to 6, with a peptide-mimetic as claimed in claim 7 or with a complex as claimed in one of the claims 8 to 15 or 21.

44. T cell as claimed in claim 43 which is derived from the T cell line 6/7 (DSM ACC2172) or has an equivalent T cell receptor binding specificity.

45. T cell as claimed in claim 43 which is derived from the T cell line 6/10 (DSM ACC2173) or has an equivalent T cell receptor binding specificity.

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